To: Sheldrake, Sean[sheldrake.sean@epa.gov]; Koch, Kristine[Koch.Kristine@epa.gov]; Allen, Elizabeth[allen.elizabeth@epa.gov]
Cc: Hazen, Gary[HazenGL@cdmsmith.com]; Broadstone, Abby[BroadstoneAR@cdmsmith.com]; Nielsen, Justin C.[nielsenjc@cdmsmith.com]; Jones, Jennifer M.[JonesJM@cdmsmith.com]
From: Coffey, Scott
Sent: Thur 4/28/2016 1:18:32 PM
Subject: FW: Portland Harbor FS: Comparison of Section 5 Requirements within Appendix J (404(b)(1) Evaluation) to Appendix G (FS Alternative Cost Estimates)

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;;;;;
Kristine and Sean.

Please find Gary's email below summarizing the results of the cross-check between cost assumptions in the FS and elements within Section 5 of the 404 document that covers impact avoidance and minimization measures.

Please let us know if you have any questions.

Scott

From: Hazen, Gary
Sent: Wednesday, April 27, 2016 7:52 PM
To: Coffey, Scott
Cc: Broadstone, Abby ; Nielsen, Justin C.
Subject: Portland Harbor FS: Comparison of Section 5 Requirements within Appendix J (404(b)(1) Evaluation) to Appendix G (FS Alternative Cost Estimates)

Good evening Scott-

As requested by EPA we performed a review of the sedimentation control practices within the Section 5 of the 404(b)(1) evaluation of Appendix J of the FS with the alternative cost estimates in Appendix G of the FS. The objective of the comparison was to determine whether elements indicated in Section 5 were adequately captured in the FS alternative cost estimates.

It should be noted that the level of scope definition for these activities as indicated in Section 5 have design-level detail and go well beyond the level of scope definition typical of a FS as described within the FS Section 3 text/appendices and related cost estimating assumptions. The FS alternative cost estimates were developed in accordance with EPA's FS cost estimating guidance (EPA 540-R-00-002, July 2000) and based on the level of scope definition and cost methodology have an expected accuracy range of +50%/-30% of actual costs.

Because of the differences in level of scope definition, some of the requirements in Section 5 may not be explicit individual cost line items but are captured in other ways such as the selection of equipment costed, productivities for the equipment assumed, allowances, professional and technical services costs, contingency, etc. In addition the level of quantity development is less detailed at an FS level of evaluation than as indicated for Section 5 of the 404(b)(1) evaluation. For instance, Section 5 indicates very specific slope requirements for riverbanks but since the FS

evaluation did not look at the location-specific differences in bank steepness, ground cover type, etc. a generalized assumption about slopes was used for cost purposes. These minor differences in quantities are assumed to be reflected in scope contingency as indicated by the FS cost estimating guidance.

Based on our review, our conclusion is that the requirements as indicated in Section 5 of the 404(b)(1) evaluation have been addressed (either directly or indirectly) within the FS alternative cost estimates. As noted above, the way that they are addressed varies and in some cases would be covered by the inclusion of scope contingency (for instance the riverbank example discussed in the previous paragraph). The following is a summary of the ways that the FS alternative cost estimates accounted for the elements within Section 5 for impact avoidance and minimization measures:

- *Direct Line item costs (e.g. silt curtains, sheet piling, etc.)*
- *Quantities of Materials (e.g. 12-in layer of sand is assumed for all dredge areas to control residuals and releases, and these quantities are captured in accordance with technology assignment rules)*
- *Equipment selection for unit cost development (e.g. use of fixed articulated arm dredge for nearshore and confined dredging operations)*
- *Crew productivity assumptions for unit cost development (e.g. reasonably conservative cycle times for fixed articulated arm dredge to minimize disturbances and suspension of sediment)*
- *Professional/technical services costs as a percentage of the overall capital or O&M costs (scope of these services as indicated in the FS cost estimating guidance)*
    - ○ *Remedial design costs to address services to design the remedial action such as pre-design investigation, surveys, treatability studies, plans, etc. (e.g. development of digital terrain model, and development of plans such as the SPCC, SWPPP, WQMCCP and dredge plan)*
    - ○ *Construction management costs to address services to manage construction such as construction observation or oversight, engineering survey for construction, documentation of QA/QC, etc. (e.g. GPS control of construction, third party oversight of equipment, construction monitoring and inspection)*
    - ○ *Technical support costs to for services to monitor, evaluate and report progress of action during O&M (e.g. monitoring activities during O&M not otherwise directly costed)*
    - ○ *Project management costs to address services not specific to design, construction management, or technical support such as planning and reporting, permitting and legal services (e.g. NPDES permitting)*
- *Allowances*
    - ○ *Cost placeholders for activities of known scope that are difficult or impossible to quantify and cost during the FS and not otherwise accounted (e.g. allowance for development of offsite transload facility)*
- *Contingency*
    - ○ *Cost placeholders and not otherwise accounted for*
    - ○ *Scope contingency to address costs unforeseeable at time of estimate preparation but that are likely to become known as the remedial design proceeds (e.g. activities*

related to fish protection, capture and removal). Scope contingency was adjusted per guidance to reflect the types of activities contemplated.

- ○ *Bid contingency to address costs unforeseeable at time of estimate preparation which are likely to become known as construction or O&M proceeds (e.g. further reductions in cycle times during construction or additional physical measures to address releases at a particular location during construction)*

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